

### Patent claims

1. A method for testing the radio transceiver in a system where the transmission signal pass band, limited by the transmission branch filter of a duplex filter, and the reception signal pass band, limited by the reception branch filter, are adjacent so that the frequency response curves of said  
5 filters partially overlap at the stop band between the pass bands, characterized by the steps of:

arranging a test loop between the transmission branch and the reception branch, wherein the test loop includes a TX coupling, a band pass  
10 filter, and a RX coupling, the test loop having essentially less attenuation on the test frequency than the duplex filter and thus a test signal proceeds via the test loop from the transmitter to the receiver,

tuning the transmitter's transmission frequency away from the transmission signal pass band to a test frequency that falls into the stop band of the transmission branch filter frequency response curve and the  
15 reception branch filter frequency response curve,

tuning the receiver reception frequency to the test frequency,  
transmitting the test signal,  
receiving the test signal which has been attenuated while passing  
20 through the test loop.

2. A method for testing the radio transceiver in a system where the transmission signal pass band, limited by the transmission branch filter of a duplex filter, and the reception signal pass band, limited by the reception branch filter, are adjacent such that the frequency response curves of said  
25 filters partially overlap at the stop band between the pass bands, characterized by the steps of:

arranging a test loop between the transmission branch and the reception branch, wherein the test loop includes a TX coupling, a switch, and a RX coupling, the test loop having essentially less attenuation on the test  
30 frequency than the duplex filter and thus a test signal proceeds via the test loop from the transmitter to the receiver when the switch having been closed by a switch control,

tuning the transmitter's transmission frequency away from the transmission signal pass band to a test frequency that falls into the stop band of the transmission branch filter frequency response curve and the  
35 reception branch filter frequency response curve,

10086425-11301

tuning the receiver reception frequency to the test frequency,  
 transmitting the test signal,  
 receiving the test signal which has been attenuated while passing  
 through the test loop.

- 5           3. A method for testing a unit comprising several radio transceivers  
 in a system where

the transmission signals are combined by a combiner into a sum  
 signal and transmitted to the duplex filter, and the received sum signal  
 containing various frequencies is routed from the duplex filter to a divider that  
 10 splits the signal containing different frequencies to be delivered to its  
 receiver,

the pass band for the system transmission signal frequencies  
 limited by the duplex filter transmission branch filter and the pass band for the  
 system reception signal frequencies limited by the duplex filter reception  
 branch filter are adjacent so that the filter frequency response curves partially  
 15 overlap at the stop band between the pass bands, characterized by  
 the steps of:

arranging a test loop between the transmission branch and the  
 reception branch, wherein the test loop includes a TX coupling, a band pass  
 20 filter, and a RX coupling, the test loop having essentially less attenuation on  
 the test frequency than the duplex filter and thus a test signal proceeds via  
 the test loop from the transmitter to the receiver,

tuning the transmitter's transmission frequency away from the  
 transmission signal pass band to a test frequency that falls into the stop  
 25 band of the transmission branch filter frequency response curve and the  
 reception branch filter frequency response curve,

tuning the receiver reception frequency to the test frequency,  
 transmitting the test signal,  
 receiving the test signal which has been attenuated while passing  
 30 through the test loop.

4. A method for testing a unit comprising several radio transceivers  
 in a system where

the transmission signals are combined by a combiner into a sum  
 signal and transmitted to the duplex filter, and the received sum signal  
 35 containing various frequencies is routed from the duplex filter to a divider that

1006435-11301

splits the signal containing different frequencies to be delivered to its receiver,

the pass band for the system transmission signal frequencies limited by the duplex filter transmission branch filter and the pass band for the system reception signal frequencies limited by the duplex filter reception branch filter are adjacent so that the filter frequency response partially overlap curves at the stop band between the pass bands, characterized by the steps of:

arranging a test loop between the transmission branch and the reception branch, wherein the test loop includes a TX coupling, a switch, and a RX coupling, the test loop having essentially less attenuation on the test frequency than the duplex filter and thus a test signal proceeds via the test loop from the transmitter to the receiver when the switch having been closed by a switch control,

tuning the transmitter's transmission frequency away from the transmission signal pass band to a test frequency that falls into the stop band of the transmission branch filter frequency response curve and the reception branch filter frequency response curve,

tuning the receiver reception frequency to the test frequency,

transmitting the test signal,

receiving the test signal which has been attenuated while passing through the test loop.

5. A method in accordance with patent claim 3 or 4, characterized in that the reception frequency of each receiver is tuned to the test frequency,

transmitting the test signal by one transmitter,

receiving the test signal by each receiver, and if at least one receiver receives the test signal correctly, it is assumed that a receiver receiving the test signal incorrectly is defective.

6. A method in accordance with patent claim 3 or 4, characterized in that

sending the test signal by the transmitters one by one,

receiving the test signal by several receivers,

inferring that the transmitter being tested is defective if at least one

receiver has received the test signal sent by any other transmitter correctly

10006425-111301

and the transmitter being tested has received the test signal sent incorrectly or not at all.

7. A method in accordance with patent claim 3 or 4, characterized in that

- 5        sending the test signal by each transmitter one by one,  
       receiving the test signal by several receivers ,  
       inferring that the test loop between the transmitters and receivers is defective, if none of the receivers receives a signal sent on the test signal frequency.

- 10        8. A system for testing the radio transceiver in a system that comprises

- a transmission branch consisting of a functionally inter-connected transmitter and duplex filter and a reception branch consisting of a functionally inter-connected receiver and duplex filter, with the duplex filter  
 15        limiting the transmission signal pass band and the reception signal pass band,

      a test control tuning the transmitter and the receiver on the same test frequency as response to control and the transmitter sending the test signal,

- 20        characterized in that it comprises:

- a test filter that is connected between the transmission branch and reception branch and causing an attenuation on the test frequency that is essentially lower than the attenuation caused by the duplex filter, which enables the test signal to proceed along the test loop from the transmitter to the receiver via a TX coupling, a switch, and a RX coupling, the test filter  
 25        causing an attenuation on the transmission signal pass band and the reception signal pass band limited by the duplex filter being essentially higher than the attenuation caused by the duplex filter, which enables the transmission signal to proceed from the transmitter to the duplex filter and on  
 30        to the antenna.

9. A system for testing the radio transceiver in a system that comprises

- a transmission branch consisting of a functionally inter-connected transmitter and duplex filter and a reception branch consisting of a  
 35        functionally inter-connected receiver and duplex filter, with the duplex filter

1008435 : 113001

limiting the transmission signal pass band and the reception signal pass band,

a test control tuning the transmitter and the receiver on the same test frequency as response to control and the transmitter sending the test

5 signal,

characterized in that it comprises:

a test filter that is connected between the transmission branch and reception branch and causing an attenuation on the test frequency that is essentially lower than the attenuation caused by the duplex filter, which  
10 enables the test signal to proceed along the test loop from the transmitter to the receiver via a TX coupling, a band pass filter, and a RX coupling when the switch having been closed by a switch control, the test filter causing an attenuation on the transmission signal pass band and the reception signal pass band limited by the duplex filter being essentially higher than the  
15 attenuation caused by the duplex filter, which enables the transmission signal to proceed from the transmitter to the duplex filter and on to the antenna.

10. A system in accordance with patent claim 8 or 9, characterized in that the test frequency is outside the range of the transmission signal pass band of the duplex filter.  
20

11. A system in accordance with patent claim 8 or 9, characterized in that the test filter is integrated within the duplex filter, in which case the test loop also includes the cabling between the transmitter and the duplex filter and the cabling between the duplex filter and the  
25 receivers.

10006425-111301